

RF-16469 (Rev. 6/94)



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October 24, 1995

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REVIEW REQUEST FOR THE PROPOSED ACTION MEMORANDUM (PAM) HOT SPOT SOIL
REMEDICATION DOCUMENT – AMP-143495

Action: Review and comment on enclosed Proposed Action Memorandum by November 14, 1995

Please find attached a draft copy of the PAM for hot spot soil remediation. Your review and comment on this document would be appreciated. These comments or changes may be submitted informally to either Duane Craft at extension 2889, or Annette Primrose at extension 4385. The fax number for either person is 2623.

In order to finalize this document, please provide your comments by November 14, 1995.

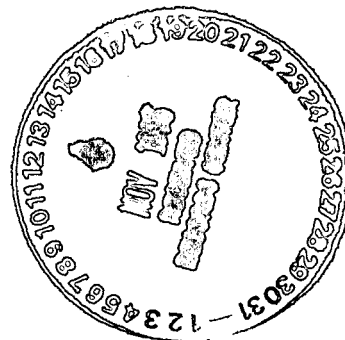
If you have questions please contact Duane Craft of my staff at extension 2889.

Alan M. Paul

A. M. Parker
Vice President
Environmental Restoration Projects

DPC:dql

Attachment:
As Stated



ADMIN RECCRD
SW-A-004212

DRAFT

**PROPOSED ACTION MEMORANDUM
FOR HOT SPOT SOIL REMEDIATION AT
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE**

October 1995

**ROCKY MOUNTAIN REMEDIATION SERVICES, L.L.C.
P.O. Box 464
Golden, Colorado 80402-0464**

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A	Federal and State Applicable or Relevant and Appropriate Requirements (ARARs)
B	Programmatic Risk-Based Preliminary Remediation Goals

LIST OF ACRONYMS

µg/m ³	micrograms per cubic meter
ARAR	Applicable or Relevant and Appropriate Requirements
BOM	Bill of Material
CAB	Citizens Advisory Board
CBOM	Construction Bill of Material
CC	Construction Coordinator
CCR	Colorado Code of Regulations
CDPHE	Colorado Department of Public Health & Environment
CE	Construction Engineer
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CM	Construction Management
COC	Contaminants of Concern
D&D	Decontamination & Decommission
dB	decibels
DCG	Derived Concentration Guidelines
DOE	Department of Energy
DOE-RFFO	Department of Energy - Rocky Flats Field Office
DQO	Data Quality Objective
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	Environmental Management
EPA	Environmental Protection Agency
ER	Environmental Restoration
ERM	Environmental Restoration Management
FE	Facilities Engineering
FIDLER	Field Instrument for Detection of Low-Energy Radiation
FS/CMS	Feasibility Study/Corrective Measures Study
GRRASP	General Radiochemistry and Routine
H&S	Health and Safety
HQ	Hazard Quotient
HSP	Health and Safety Practices
HSWA	Hazardous and Solid Waste Amendments
HWA	Hazardous Waste Act
IAG	InterAgency Agreement
IDM	Investigative Derived Material
IH	Industrial Hygienist
IHSS	Individual Hazardous Substance Site
IM/IRA	Interim Measure/Interim Remedial Action
IWCP	Integrated Work Control Process
LFI	Limited Field Investigation
LLM	Low-Level Mixed Waste

LIST OF ACRONYMS, (Continued)

LLW	Low-Level Waste (radioactive)
MAC	Maintenance Action Center
NAAQS	National Ambient Air Quality Standards
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NFA	No Further Action
NTS	Nevada Test Site
OM	Operations Manager
OSHA	Occupational Safety and Health Act
OU	Operable Unit
OVA	Organic Vapor Analyzer
PA	Protected Area
PAM	Proposed Action Memorandum
PARCC	Precision, Accuracy, Representation, Completeness, and Comparability
PCOC	Potential Contaminants of Concern
PEA	Potential Early Action
PMT	Post-Maintenance Testing
PPCD	Plant for Prevention of Contaminant Dispersal
PPE	Personal Protective Equipment
PPRG	Programmatic Preliminary Remediation Goal
PRG	Preliminary Remediation Goal
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RE	Radiological Engineering
RFEDS	Rocky Flats Environmental Database System
RFETS	Rocky Flats Environmental Technology Site
RFI/CMS	RCRA Facility Investigation/Corrective Measures Study
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SDAF	Soil Disturbance Approval Form
SDEF	Soil Disturbance Evaluation Form
SOP	Standard Operating Procedure
SSDF	Site Survey Determination Form
SVR	Small Volume Removal
SWDA	Solid Waste Disposal Act
SWP	Standard Work Package
TAL	Target Analyte list
UTL	Upper Tolerance Limits
UV	Ultraviolet (radiation)
VOC	Volatile Organic Compound
WAC	Waste Acceptance Criteria
WEMS	Waste Environmental Management System

LIST OF ACRONYMS, (Continued)

WCF
WP
WPCL
WSRIC

Work Control Form
Work Package
Work Package Change Log
Waste Stream Identification and Character-
ization

1.0 PURPOSE

This soil remediation action is proposed for implementation to remediate small volumes (less than 500 cubic yards) of contaminated soils (Hot Spots) at Rocky Flats Environmental Technology Site (RFETS). A hot spot is defined as a limited area of contamination with a proposed preliminary remediation goal (PPRG) ratio of at least 100. Under this proposed action, the contaminated soils will be removed to cleanup standards agreed to by the Department of Energy (DOE), Environmental Protection Agency (EPA), and the Colorado Department of Public Health and Environment (CDPHE). The sites will be reestablished to achieve comparable conditions to the surrounding area with respect to concentration and habitat.

2.0 PROCESS OVERVIEW AND BACKGROUND

This document creates a process for expedited cleanup or resolution of environmental concerns regarding soil contamination at RFETS. Potential actions which may be taken under this Proposed Action Memorandum (PAM) are:

1. Small Volume Removal (less than 5 cubic yards), or
2. Selective Excavation (greater than 5 but less than 500 cubic yards).

A methodology for the selection of candidate sites is presented. In addition, there is a mechanism created for implementation of the remedial action, together with verification sampling and documentation of the action. Each of these facets of the program is briefly described in this section.

Potential candidate sites will be selected using the following criteria:

- Adequacy of available, environmental data,
- Pre-remediation health and environmental risk,
- Potential for contaminant migration,
- Availability of soil storage, treatment, and disposal capacity,
- Compatibility with future Individual Hazardous Substance Site (IHSS) remedial actions,

- Implementability of the action described in this document,
- Effectiveness of the action, and
- Achievement of PPRGs

Sites remediated under the Soil Remediation PAM will be those that can be remediated with limited excavation. Candidates for excavation under the Soil Remediation PAM will consist of areas with contaminated soil volumes of less than 500 cubic yards. Confirmatory sampling will be performed in all excavations for verification that the action has met PAM cleanup standards.

Small volumes removals of contaminated soil may be excavated and disposed/stored without issuance of an Implementation Document or other form of regulatory approval. These actions will be performed in accordance with procedures established in this PAM.

Excavated materials will be placed in proper storage, for future treatment and/or disposal as appropriate. Waste will be further dispositioned in the Implementation Plan. To the maximum extent practicable, these actions will meet ARARs, but they are not necessarily the final actions for remediation of the IHSSs.

Selective excavations to be performed at each candidate site will be detailed in an Implementation Document. The Implementation Document will contain a brief summary of the applicable environmental data, a recommended action, and an explanation of how the proposed action meets the criteria set forth in the PAM. Final drawings, and specifications will also be included in the Implementation Document.

A Completion Report will be prepared for each action (including small volume removals) after all work is complete and the confirmatory sampling data have been validated. The report will consist of a brief description of the work performed, confirmatory sampling conducted, analytical results and deviations from the Implementation Document. DOE will prepare monthly progress reports to keep EPA, CDPHE, RFETS representatives, and the public apprised of progress in implementing the PAM.

3.0 PROJECT APPROACH

This section provides a discussion of the two alternatives which are considered under the Soil Remediation PAM, namely:

- Small Volume Removal, and
- Selective Excavation.

3.1 SMALL VOLUME REMOVAL

Small volumes of contaminated materials may be excavated without issuance of separate Implementation Documents or other form of DOE, regulatory or public approval. Small volume

removals are defined as soil quantities less than 5 cubic yards. However, an updated list of all planned and completed Small Volume Removals (SVR) will be provided quarterly to the EPA, CDPHE, and Public document centers.

The intent of the small volume exclusion is to expedite the removal of small volumes of soils without delays imposed by the review process. It is presumed that these actions will:

- Be consistent with the selected final remedy,
- Protect human health and the environment,
- Be cost effective, and
- Significantly reduce the volume, toxicity, or mobility of contaminants.

All SVRs will comply to the extent practicable with ARARs or PPRGs.

Excavation, field verification methods, and backfill requirements as described in Section 3.2 will be followed. Excavated materials may be placed in drums, crates, or smaller roll-off containers. Excavated materials will be transported and stored on site as specified in Section 3.3.

A Completion Report will be issued for each SVR action. However, a combined report including multiple SVR actions may also be provided. Verification sampling will be completed in accordance with sampling and analysis requirements.

3.2 SELECTIVE EXCAVATION

Candidates for excavation under the Soil Remediation PAM will be areas with contaminated soil volumes which can be remediated without the use of in-situ treatment (e.g. soil vapor extraction, and in-situ stabilization). A 500 cubic yard excavation limit has been selected as the practical maximum volume which can be excavated without considering a broader range of alternative remedial actions.

The depth of excavation will generally not exceed 4 feet. This depth has been selected as the maximum excavation depth because it is very unlikely that humans or biota would be exposed to soil contaminants located beneath 4 feet of clean fill. This document is limited to hot spots, so if contamination exceeds small amounts (greater than 500 cubic yards), the action required must be reconsidered. Also, shoring and confined space entry requirements are imposed at a depth of 4 feet. These requirements would add significant cost and increase execution times for each action. Other site-specific conditions may also limit excavation depths, such as the presence of critical

utilities or saturated soils. Under some circumstances, it may be desirable to excavate beyond four feet.

The bulk of the soils will be excavated using mechanical equipment. Some hand excavation may also be required. Excavated soils will be placed in either metal roll-off containers, half-crates, full-crates, or drums. Containers will be sealed when full. Excavated materials will be transported and stored on site as discussed in Section 3.3.

Excavation will be performed in accordance with procedures described in Standard Operating Procedure (SOP) number 5-21000-OPS-GT.24. This includes requirements for monitoring and control of dust (SOP FO.1), general equipment decontamination (SOP FO.3), and heavy equipment decontamination (SOP FO.4). In addition, SOP GT.24 requires approvals from appropriate plant operations, particularly Facilities Engineering (FE) which provides utility clearances.

During the excavation process, field tests for radioactivity and/or volatile organic compound(s) content (as appropriate) will be performed for every foot of depth of excavation.

- Gamma and low energy x-ray radiation will be evaluated using a Bicron Field Instrument for the Detection of Low-Energy Radiation (FIDLER).
- Alpha and beta/gamma surveys.
- Organic content will be determined based on headspace analyses of bagged samples. Measurements will be made using either a photoionization (PID) detector or a flame ionization detector (FID) as appropriate.
- Additional real-time analyses for contaminants may be used as necessary to delineate the extent of contamination.

In addition, the soils exposed in the excavation will be visually described and logged.

When the field screening tests indicate that either sufficient soil has been excavated or the depth or volume limitations have been reached, confirmatory samples will be collected for laboratory analysis. A Completion Report will be issued for each soil removal action.

3.3 WASTE MANAGEMENT

This section discusses in general terms the Rocky Flats Plant Field Operation Procedures applicable to managing wastes generated during the implementation of a Soil Remediation PAM. Additional procedures may require development depending on type of containerization and disposal location. These procedures will be included in the Implementation Plan. The site manager will be responsible for adhering to these procedures and, in general, the proper handling of all materials generated during soil remediation PAMs. This section discusses the handling of the generated waste, waste storage/disposal options, and managing field decontamination wastes.

3.3.1 HANDLING OF WASTE FROM SOIL PAM'S

The contaminated soil (containing low-level radioactive, low-level mixed, or hazardous materials) removed from the IHSS or hot spot during the PAM will be containerized at the site in drums (either 55-gallon or 30-gallon), in half or full crates, or large capacity roll-off containers depending on the expected volume of contaminated soil. The intent will be to minimize the number of containers. The RFETS waste procedures will be adhered to at all times.

Before soils are excavated, the site team will secure the necessary drums or containers to store the soils. The site team will receive the drums or containers from Rocky Mountain Remediation Services (RMRS) Remediation Support and a unique Waste Environmental Management System (WEMS) identifying number will accompany each drum or container. The site team will use this number to track each drum or container on a Field Log Form until it is returned to RMRS.

Once a drum or container is filled, it will be sealed and a temporary sample custody seal will be placed on it. The site team will then mark each drum or container with proper locational information, depth of material in container, and date it was filled. This information will also be recorded on the Field Log Form along with sample number(s) of samples taken from the container and electronically transfer drum fill data to RFEDS. The containers will then be transported to a storage area.

The site team will present copies of the completed Field Log Forms and other required documentation to the receiving RMRS Waste Operations or Waste Management personnel. The receiving RMRS personnel will inspect the drums or containers and if they pass inspection, the RMRS personnel will sign the forms and relieve the site team of the responsibility for the drums.

If any miscellaneous waste are encountered, they will be managed, recycled, treated and/ or disposed in accordance with the Federal, State and local laws and regulations, and RFETS policies and procedures.

3.3.2 STORAGE/DISPOSAL OPTIONS FOR WASTE FROM SOIL EXCAVATION PAMS

The options for disposing of the contaminated soils removed during PAMs will depend on whether the waste is characterized as hazardous, low-level radioactive, or low-level mixed waste. Contaminated soils characterized as hazardous waste will be transported off site for disposal in accordance with Waste Management procedures. The Sampling and Analysis Plan (SAP) requirements will be specified in the Implementation Plan.

3.3.3 MANAGING FIELD DECONTAMINATION WASTES

The site team will reduce the contamination of equipment and container surfaces in the field in an effort to reduce overall contamination before these items are moved from the work site. To accomplish this decontamination, the site team will follow all applicable procedures, including documentation requirements, as specified in Field Operation Procedure FO.3 - General Equipment Decontamination and Field Operation Procedure FO.4 - Heavy Equipment Decontamination.

The site team will follow the procedures specified in Field Operation Procedure FO.7 - Handling of Decontamination Water and Wash Water to properly dispose of any water generated during field decontamination activities. In general, the site team will contain decontamination water in tanks. The site team will properly dispose of decontamination water per established plant procedures.

The site team will dispose of potentially contaminated personal protective equipment (PPE) in accordance with Field Operation Procedure FO.6 - Handling of PPE. In general, PPE will be double-bagged in 3-mil plastic bags and these bags will be transported to the RMRS Remediation Support Group for disposal.

4.0 CRITERIA FOR REMEDY SELECTION

As discussed in the introduction to this document, potential candidate sites will be selected using the following criteria:

- Adequacy of available, validated environmental data;
- Health and environmental risk;
- Potential for contaminant migration;
- Availability of soil storage, treatment, and disposal capacity;
- Compatibility with future IHSS remedial actions;
- Implementability of the action described in this PAM;
- Ease of implementation or feasibility;
- Effectiveness of the action; and
- Achievement of Applicable or Relevant and Appropriate Requirements (ARARs).

Thus, the selection of hot spots for inclusion in this PAM process depends on the availability of validated site data, operational and remedial design constraints, and an approved list of ARARs or PPRGs. The following sections discuss site data needs and their remedy selection implications.

4.1 BASIC DATA REQUIREMENTS

In order for a hot spot to be considered for possible early action under this PAM process, there must be sufficient, environmental data to understand the nature and extent of contamination, the current health and environmental risks and the potential for contaminant migration. Data sufficiency is a problematic issue. Therefore, a team of environmental professionals including representatives from the agencies will need to assess current data against data needs and assess data adequacy.

4.2 EXCAVATION

Contaminated soil will be removed only if sufficient, validated data are available to understand the nature and extent of contamination, the current health and environmental risks and the potential for contaminant migration. Real-time field analytical techniques may be used to supplement

understanding of the nature and extent of contamination prior to, and during remedial actions. In addition, the action must meet the following criteria:

1. The action must be protective of human health and the environment;
2. The action must reduce current or potential risk with a goal of obtaining the PPRG ratio equal to or less than 10^{-4} cancer risk, and/or background levels.
3. The action must be consistent with, or must not interfere with the final action;
4. The action must be consistent with, or must not interfere with current plant activities;
5. The action must be implementable using the plans, specifications and procedures described in this PAM with little or no modification; and
6. The action must be feasible after considering all of the above.

There are also numerous site and contaminant specific factors which will influence the selection of the removal remedies. Each of the remedies is discussed below.

Small Volume Removal

Small volume removal actions will only be undertaken for contaminated soil volumes of less than 5 cubic yards and that do not involve removal of soil from the saturated zone. In addition, the contaminants must not pose an extreme threat to worker safety during the removal action.

Selective Excavation

Contaminated soils will be removed by excavation if the total volume of excavated material is anticipated to be less than 500 cubic yards. Removal actions may be reconsidered if depth of contamination is 4 feet or more [Occupational Safety and Health Act (OSHA)] shoring and confined entry procedures are required), the area has a large population of burrowing animals, the contaminated soils appear to be an active source of ground-water contamination, or if the

contaminants are likely to degrade naturally into less hazardous compounds in the surficial or subsurface environment.

4.3 REMEDY SELECTION PROCESS

The selection of an action for a specific hot spot will be presented in the Implementation Document. The procedure used will be based on the criteria and requirements included in this PAM as described below.

1. Determine if data requirements are met.

The basic data requirements are described in Section 4.1. These requirements must be satisfied before a hot spot can be considered for inclusion in the Soils Remediation PAM. Additional field investigations may be required if the available data are not adequate.

2. Determine if action is appropriate under this Soil Remediation PAM.

In order for an action to be taken under this PAM, the following requirements must be met:

- a) The action will reduce risk:
 - will be protective of public health and the environment, and
 - can be performed without significant risk to workers, plant site personnel, or the general public
- b) The action:
 - has no need for special construction techniques,
 - can be performed in accordance with applicable standard plant procedures,
 - can be performed using the plans and specifications referred to in this PAM,
 - does not involve in-situ treatment, i.e., solidification, soil washing, etc., and

- does not require more than 500 cubic yards of contaminated soil to be excavated.
- c) The action does not significantly interfere with:
 - current plant activities, or
 - potential final remediation.
- d) The action will meet the PPRGs and/or acceptable risk-based levels included in this PAM.

If an action is appropriate based on the above criteria, and the contaminated soil volume is less than 5 cubic yards, the action will be performed as described in this document without issuance of an Implementation Document.

5.0 POTENTIAL APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) AND TO-BE-CONSIDERED GUIDANCE (TBCs)

This section contains potential ARARs and TBCs for the RFETS Soil Remediation PAM. A summary of the ARARs and TBCs is included in Appendix A.

5.1 INTRODUCTION

In accordance with the IAG, an objective of accelerated actions at RFETS is the identification and compliance with federal and state ARARs and other TBC criteria that are associated with this proposed action. There are three types of ARARs: (1) chemical-specific, (2) location-specific, and (3) action-specific.

5.2 AMBIENT OR CHEMICAL-SPECIFIC ARARS

Chemical-specific ARARs set concentration limits for soil, groundwater, or surface water for specific pollutants. There are no chemical-specific ARARs for soil; however, there are some guidance documents which can be used as TBCs for soils. For example, the USEPA Office of Solid Waste and Emergency Response (OSWER) published guidance (Directive 9347-09FS) specific to delisting hazardous waste. There are about 30 chemicals in this guidance with a de minimus concentration for each which can be used as a TBC clean-up level. In addition, TSCA is a source for TBC's when dealing with PCB's, and DOE orders list the TBC's for radionuclides. Approved site-specific PPRGs can also be used as TBC clean up levels and are included in Appendix B.

5.3 LOCATION-SPECIFIC ARARS

Location-specific ARARs are regulations that set restrictions on activities or contaminant levels based on unique characteristics of the site. The provisions of 40 CFR 6.302(a) and (b) regarding construction that would have an adverse impact on wetlands or within a flood plain, the Endangered Species Act (16 USC 1531 et seq.), the Migratory Bird Treaty Act (16 USC 703 et seq.), the Bald Eagle Protection Act (16 USC 688 et seq.) and dredged or fill material into waters of the US (40 CFR 230) are all considered relevant and appropriate to this Soil Remediation PAM. Based upon where the potential soil removals will occur, DOE believes that there will be no adverse impact on wetlands from the soil removals. However, coordination will be maintained with the U.S. Fish and Wildlife Service to minimize such adverse wildlife impact, including threatened or endangered species or their habitats, from implementation of the Soil Remediation PAM.

5.4 ACTION-SPECIFIC ARARS

The action-specific ARARs set controls or restrictions on particular kinds of activities related to management of hazardous substances or pollutants. Specifically, regulations pertaining to air, landfill disposal restrictions, wetlands, wildlife and radioactive wastes were reviewed. The Atomic Energy Act and the Occupational Safety and Health Act (OSHA) were reviewed as TBC material¹.

Air

In the context of this PAM, there is a very remote chance of any release of volatiles, semivolatiles, metals or radionuclides other than fugitive emissions. Even if such a release did occur, it would only be minimal and of very brief duration. Any potential air emissions will be dealt with in the Health & Safety Practices (HSP) document.

Land Disposal Restrictions and Removal of Soil

Material determined to be hazardous waste are subject to substantive State and Federal provisions for their management. These substantive provisions include but are not limited to: 40 CFR Part 262 (Standards Applicable to Generators of Hazardous Waste), 40 CFR Part 263 (Standards Applicable to Transporters of Hazardous Waste) and 40 CFR Part 264 (Standards for Owners and Operators of Hazardous Waste). These provisions are also covered in the Colorado Hazardous Waste Act (CRS 25-15-101 to 313). The Colorado Hazardous Waste Act contains guidelines and requirements for hazardous waste disposal sites. Not all soil removals will involve "hazardous waste" The potential ARARs will be reviewed in the Implementation Document for each removal under this PAM before the removal occurs.

¹The RFP is not NRC-licensed and regulated and, therefore, Atomic Energy Act regulations are designated as TBC. In addition, worker protection under OSHA is not considered an ARAR under Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

The Land Ban regulations (40 CFR 268) are a direct result of the Hazardous and Solid Waste Amendments (HSWA) of 1984. For each hazardous waste, EPA establishes treatment standards that are protective of human health and the environment when the wastes are land disposed. Land disposal includes placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome or salt bed formation, underground mine or cave, or concrete vault or bunker. The Land Ban regulations were reviewed and determined to be applicable and relevant and appropriate for any excavated soil that will be sent off site for disposal².

Wetlands and Wildlife

DOE does not believe that any wetlands could be adversely affected by the Soil Remediation PAM. However, until a final design for each removal is selected, it cannot be definitively determined that no impact on wetlands will occur. If the final site selection and/or design results in an impact on wetlands, the DOE will review the regulatory provisions concerning wetlands impact and other appropriate guidance, and will proceed in a manner consistent with those provisions. There are no action-specific regulations for wetlands; however, location-specific regulations are mentioned in Section 5.3. The Colorado Wildlife Enforcement and Penalties (CRS 33-1-101 et seq.), which prohibits actions detrimental to wildlife, is relevant and appropriate. Coordination will be maintained throughout the project with the U.S. Fish and Wildlife Service concerning any potential impacts on wetlands or wildlife.

Radioactive Wastes

²In addition, USEPA's proposed rule on Hazardous Soil (58 FR 48092) was reviewed. This rule proposed the regulatory framework for treatment of soil containing characteristic or listed waste in accordance with the land disposal requirements. This rule will be finalized in the Hazardous Waste Identification Rule due to be published in October 1994 and will have an impact on compliance with the land disposal restrictions.

The Atomic Energy Act (CFR Title 10 Article 20) outlines provisions, requirements, and standards in the management of radioactive materials. Colorado State Radiation Control (CRS §25-11 Parts 1 and 2; and 6 CCR 1007-1) provides provisions and outlines state requirements in the management of radioactive materials and radioactive waste. 6 CCR 1007-1 Part 14 establishes the requirements for land disposal of low-level radioactive wastes, and Part 15 identifies the standards for low-level radioactive wastes. DOE provides guidance in the management of radioactive wastes from generation to disposal. All of these are relevant and appropriate.

5.5 DEPARTMENT OF ENERGY ORDERS

The DOE orders are not promulgated requirements and are TBCs potential ARARs (EPA, 1989). The orders have been developed for internal DOE use and are not subjected to public review and comment before issuance. The following orders incorporate guideline concentrations for chemicals and radionuclides:

DOE Order 5400.1 "General Environmental Protection Program"

DOE Order 5400.1 establishes DOE's environmental protection program requirements for compliance with applicable Federal, State and local environmental laws, regulations, and policies. This Order details the mandatory environmental protection standards that DOE will follow at all facilities. These standards are referenced in this document as appropriate for the proposed interim actions.

DOE Order 5400.5 "Radiation Protection of the Public and the Environment"

The DOE Directive 5400.5 (DOE, 1990) establishes broad standards and requirements designed to protect the public and environment against undue risk from radiation released from routine DOE activities and remedial actions. The following radiation exposure limits have been defined for members of the public:

- an effective dose equivalent of less than 100 millirem/year (all exposure pathways considered);
- an effective dose of less than 4 millirem/year (only the drinking water pathway considered); and

The directive includes derived concentration guidelines (DCGs) for discharges of radioactively contaminated liquids to surface waters, aquifers, soil and sanitary sewerage systems. Chapter VI "Residual Radioactive Material" sets the requirements and guidelines for the cleanup and management of residual radioactive materials in soils. DOE 5400.5 will be considered in the Soil Remediation PAM³.

DOE 5820.2A "Radioactive Waste Management"

This order establishes policies, guidelines and requirements for managing DOE radioactively contaminated waste (e.g., transuranic and low level waste) starting with its generation and continuing through disposal. The requirements of this order are applicable to any radioactively contaminated waste, which, for the purpose of this document, would be generated from soil excavation under this PAM involving radioactively contaminated soil.

5.6 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

The intent of NEPA is to ensure the consideration of the widest possible range of beneficial uses of the environment with the goal of protecting the human environment and will absolutely be adhered to by all Soil Remediation PAM actions.

All hot spot removals are expected to be covered by the most relevant categorical exclusion that is applicable to Soil Remediation PAM actions which is as follows:

Removal actions under Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (including those taken as final response actions and those taken before remedial action)

³Currently, in order to determine if a waste is radioactively contaminated for disposal purposes (either on site or off site), the material must first have a radiological evaluation performed in accordance with the No-Radioactivity-Added (NRA) program.

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and removal-type actions similar in scope under RCRA . . . including treatment, recovery, storage, or disposal of wastes at existing facilities. Actions include, but are not limited to: (a) capping or other containment of contaminated soils or sludges if the capping or containment would not affect future groundwater remediation and if needed to reduce migration of hazardous substances, pollutants, contaminants . . . into soil, groundwater, surface water or air; and (b) excavation or consolidation of contaminated soils or materials from drainage channels, retention basins, ponds, and spill areas . . . if such actions would reduce the spread of, or direct contact with, the contamination (10 CFR Part 1021, Sub part D, Appendix B).

Any removal that meets any of the following conditions, will not be addressed by this PAM.

- It is "connected" to other actions with potentially significant impacts, or is related to other proposed actions with cumulatively significant impacts (10 CFR 1021.410).
- It requires siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (10 CFR 1021, Sub part D, Appendix B). The Accelerated Cleanup Program at Rocky Flats is predicted on the construction or possible expansion of waste storage facilities; however, the Soil Remediation PAM actions alone are not the cause for these expansion plans. Regardless, incorporated into the planning process for constructing a waste storage facility is the explicit consideration of NEPA requirements for such a project.
- It adversely affects environmentally sensitive resources such as threatened or endangered species, or floodplains or wetlands (10 CFR 1021, Sub part D, Appendix B).

Regular communication will be maintained with the DOE-RFFO NEPA Coordinator to maintain the eligibility of Soil Remediation PAM actions for the categorical exclusion.

6.0 RISK EVALUATION METHODOLOGY

Hot spots are defined as defined a limited area of contamination with a proposed preliminary remediation goal (PPRG) ratio of at least 100. Therefore, these small areas that have PPRGs that exceed a ratio of 100 will define the area to be removed.

Programmatic risk-based PPRGs have been developed by DOE which will be considered in establishing initial sitewide cleanup targets. These PPRGs are provided in Appendix B.

7.0 IMPLEMENTATION SCHEDULE

The removal of contaminated soils in the identified hot spot area will be complete within six months of approval. Any delays, scope or budget changes may affect the project duration.

8.0 REFERENCES

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Appendix A

Federal and State Applicable or Relevant and Appropriate Requirements (ARARs)

Appendix B

Programmatic Risk-Based Preliminary Remediation Goals